

REMARKS

Claims 1-34, are all the claims pending in the application. Claims 1-11 and 20-34 are rejected. Claims 12-19 are allowed. Claims 1-11 and 20-34 are cancelled Claims 16-23 and 31-34 are amended.

Oath/Declaration

The Examiner objects to the oath or Declaration because it is considered defective. The new oath or Declaration in compliance with 37 C.F.R. § 1.67(a) is required. The Examiner notes that the oath or Declaration is defective because it does not identify the foreign application (JP 2003-076831 filed on 20 March 2003) from which priority is claimed. This objection is traversed for the following reasons.

Upon review of the Declaration, which was late submitted, Applicants noted that a supplemental priority data sheet was attached at page 5 of 5 and listed Japanese Appln. 2003-076831. Clearly, this cannot be a basis for objection.

However, Applicants also noted that the Declaration did not have an identification of the present application at page 1. Accordingly, a new Declaration from the inventors comprising 5 pages is enclosed.

Specification

The Examiner notes that the specification has not been checked to determine the presence of possible minor errors. The Examiner requests Applicants cooperation in correcting any errors. In reply, Applicants state that they are not aware of any errors that need to be corrected.

Claim Rejections - 35 U.S.C. § 102

Claims 1-4, 6 and 8-11 are rejected under 35 U.S.C. § 102(b) as being anticipated by Farrokhnia et al (6,231,231). This rejection is moot in view of the cancellation of all of the rejected claims.

Claims 20, 22, 24, 31 and 33 are rejected under 35 U.S.C. § 102(a) as being anticipated by Farrokhnia et al (6,694,047). This rejection is traversed for at least the following reasons.

As a preliminary matter, Applicants note that the rejection with respect to claim 24 is moot in view of the cancellation of the claim.

With respect to claims 20, 22, 31 and 33, these claims have been amended to clarify the subject matter that they define. The rejected claims concern a medical image processing apparatus and method for evaluating image quality of a radiation image. Although not expressly stated, the method and apparatus concerns the evaluation of the QC phantom, but only in connection with a quantitative evaluation. An example of a modified QC phantom is described beginning at page 52 of the present specification and is illustrated in Figs. 12-14. Again, both visual as well as quantitative evaluation portions appear on the QC phantom.

In connection with the evaluation of the first and second embodiments of the QC phantom, the present application teaches a method (pages 32-51) and apparatus in Fig. 1. A structure of the second embodiment is disclosed in Fig. 15 (page 56-60). A structure of a third embodiment is disclosed at pages 62-64 and the inspection method in connection with the third embodiment is disclosed with regard to Figs. 16 and 17 at pages 64-65. A fourth embodiment is disclosed with regard to Fig. 18, beginning at page 65, with an inspection method as disclosed in Fig. 19 at pages 67-68.

As stated on page 68, the inspection method of the radiation imaging system, the medical image processing apparatus using the same and the QC phantom used for the inspection of the radiation image system according to the first through fourth embodiments have been described. The apparatus of the first embodiment is illustrated in the block diagram of Fig. 1 and discussed at pages 20-27.

Claim 20 specifies that the medical image processing apparatus contains several components for inspecting a radiation imaging system (using a QC phantom). The claim has been amended to state that the search area changing means changes the search area on the basis of an amount of difference in the linear direction and the rotational direction calculated by the comparison and calculation means. Similarly, the determination criterion changing means changes a determination criterion on the basis of an amount of difference in the linear direction

and the **rotational direction** calculated by the comparison and calculation means. Comparable changes are made to claims 22, 31 and 33 as well.

Farrokhnia et al '047

The Examiner has identified in Farrokhnia et al '047 where various features set forth in several claims may be found. Since independent claims 20 and 31 are similar apparatus and method claims, and independent claims 22 and 33 are similar apparatus and method claims, Applicants have considered each pair with a common analysis.

Claims 20 and 31

In particular, the Examiner finds the “position detecting means”, which uses markers for position orientation, to be disclosed at col. 10, line 63 - col. 11, line 20, col. 11, line 44 to col. 12, line 51. There, use of a plurality of markers in the form of the ring 230 and fiducials 240, or line segments 140 are disclosed.

The Examiner asserts that the “comparison and calculating means” is disclosed at col. 12, lines 37-51. However, this express limitation requires the calculating of an amount of difference in a **linear and rotational direction**. The cited text does not teach a calculation in a rotational direction.

With regard to the “search area changing means,” the Examiner identifies the teachings at col. 12, line 64 - col. 13, line 16, as relevant. This limitation has been amended to specify the changing of the search area on the basis of an amount of difference in a **linear and rotational direction**. In the cited art, there is no corresponding reliance on a difference in both a linear and a rotational direction.

With regard to the “determination criterion changing means,” the Examiner points to the disclosure at col. 13, line 46 - col. 15, line 60 for this limitation. The claim requires a change of a determination criterion to be used for determining image quality on the basis of the amount of difference calculated by the comparison and calculating means. The Examiner appears to consider the steps of changing the regions of interest (ROI) in each of the successive steps of the disclosed flow charts 1700 in Fig. 17 to meet this limitation. However, there does not appear to be any determination criteria used to calculate a difference that serves to change the

determination criterion used for determining image quality. Moreover, this limitation has been amended to specify the changing of the determination criteria on the basis of an amount of difference in a linear and rotational direction. In the cited art, there is no corresponding reliance on a difference in both a linear and a rotational direction.

The Examiner points to the teachings at col. 13, line 46 - col. 15, line 60 for the "determination means" set forth in claim 20. Notably, the Examiner looks to the same teaching for both the determination criteria changing means (which Applicants assert is not present) and the determination means. The same structure in the prior art reference cannot be cited for a disclosure of two distinct and structurally related limitations. Even if the Examiner asserts that there are two separate means, on the basis of a determination of image quality by using the physical amount calculated by the physical amount calculating means, it is not calculated on the basis of the determination criterion changed by the determination criterion changing means.

Thus, because at least three limitations in the claim are not found in the cited reference. Thus, Applicants respectfully submit that the claims are not anticipated because several of the limitations, are not met in the teachings of Farrokhnia et al. '047.

Claims 22 and 33

Independent claim 22 and corresponding method claim 33 are asserted to be anticipated by the teachings in Farrokhnia et al '047. Again, the Examiner finds the "position detecting means," "comparison and calculating means," "physical amount calculating means" and "determination means" to be the same as found with respect to claim 20. Applicants' comments with regard to the "comparison and calculating means" would apply because it is expressly limited to a calculation of an amount difference in a linear direction and rotational direction.

The Examiner also notes that the additional limitation to an "image correcting means" is found at col. 12, lines 37-51. The recited limitation has the function of correcting the position of the phantom in the radiation image so that the amount of difference calculated by said comparison and calculating means is reduced. Moreover, this limitation has been amended to expressly state that the position of the phantom in the radiation image is corrected "so that the amount of difference in the linear direction and the rotational direction calculated by said

comparison and calculating means is reduced.” This limitation is not taught in the prior art and, thus, this claim cannot be anticipated, nor would it be obvious.

This same analysis would apply to independent method claim 33.

Claim Rejections - 35 U.S.C. § 103

Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Farrokhnia et al (6,231,231) in view of Vuylsteke et al (5,804,810). This rejection is moot in view of the cancellation of the claim.

Claim 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over (6,231,231) in view of Vogl et al (4,126,789). This rejection is moot in view of the cancellation of the claim.

Claims 21, 23, 26, 32 and 34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Farrokhnia et al (6,694,047) in view of Lang (2002/0067798). This rejection is traversed for at least the following reasons.

As a preliminary matter, the rejection of claim 26 is moot in view of the cancellation of the claim.

The Examiner asserts that with regard to these dependent claims, the apparatus and method of Farrokhnia et al. ‘047 lacks control means for controlling notification of a maintenance center of existence of an abnormality when the determination means has determined that the abnormality of the image quality exists in the radiation image. The Examiner looks to Lang for a teaching at paragraph 7-23 that expert images and/or data can be distributed over a network to a variety of different recipients for further analysis and/or action. Thus, the Examiner finds it obvious to combine the references to obtain a network for distributing extra images and/or data to a variety of recipients, and asserts that this may include a maintenance center.

Applicants respectfully submit that the Lang reference does not remedy the basic deficiencies already cited in the parent claims with regard to Farrokhnia et al. ‘047. Thus, claims dependent on allowable claims 20, 22, 31 and 33 (21, 23, 32 and 34) should be allowed as well.

Claim 25 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Farrokhnia et al (6,694,047) in view of Farrokhnia et al (6,231,231). This rejection is moot in view of the cancellation of the claim.

Amendment under 37 C.F.R. § 1.111
Application No. 10/790,142

Claims 27-29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Farrokhnia et al (6,694,047) in view of Schulze-Ganzlin et al (5,539,799). This rejection is moot in view of the cancellation of the claims.

Claim 30 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Farrokhnia et al (6,694,047) in view of Schulze-Ganzlin et al (5,539,799) and further in view of Lang (2002/0067798). This rejection is moot in view of the cancellation of the claim.

Allowable Subject Matter

The Examiner indicates that claims 12-19 are allowed. Applicants appreciate the Examiner's indication of allowability will be expressed.

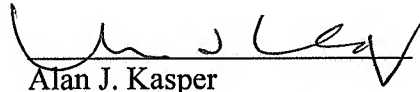
Amendment under 37 C.F.R. § 1.111
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Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


Alan J. Kasper
Registration No. 25,426

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

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